

Gene therapy cancer treatment begins

In the first gene therapy attempt to fight cancer with cancer, physicians at the National Institutes of Health last week gave a cancer patient an experimental dose of his own tumor cells genetically engineered to bolster his immune system.

Steven A. Rosenberg of the National Cancer Institute injected 200 million live tumor cells containing added genes for tumor necrosis factor (TNF) into the thigh of a 46-year-old man with advanced melanoma, the most lethal form of skin cancer. Rosenberg had taken the malignant cells from the man's skin and used a crippled retrovirus to insert into them extra copies of the gene for the immunity-stimulating protein TNF.

In three months, Rosenberg plans to remove some of the man's white blood cells, called lymphocytes, which the extra TNF genes have stimulated to attack the engineered tumor cells. After multiplying 200 billion of the lymphocytes in a second laboratory culture, he intends to readminister them to the patient, in the hope that they will home in on and kill most of the man's melanoma tumors.

Rosenberg began the new therapy just hours after receiving approval from the agency's Recombinant DNA Advisory Committee and the NIH director. He first proposed the experiment at a meeting of cancer experts in May (SN: 5/25/91, p.326).

Rosenberg has permission to test the gene therapy treatment on 15 patients — five each with advanced melanoma, colorectal cancer and kidney cancer — over the next year. He also has clearance to treat some of these 15 patients with their own tumor cells engineered to carry a gene for a second immune-stimulating protein, interleukin-2.

Rosenberg says the immunity boosting genes should help the patients' bodies to recognize and fight their cancers. By

removing and multiplying the cancer-fighting lymphocytes in the experiment's second step, he says he expects to increase each patient's anti-cancer arsenal.

Gene mapped for inherited hearing loss

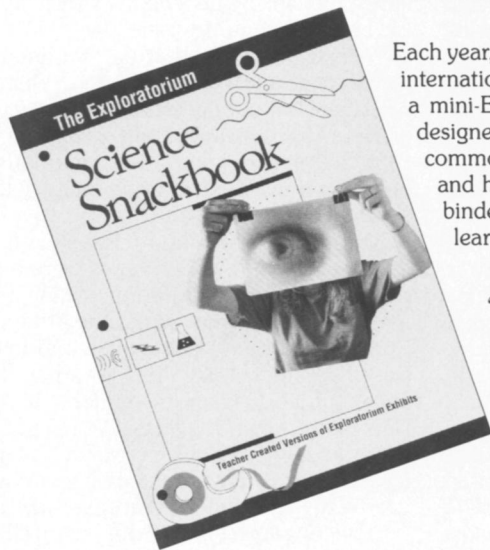
By studying deafness among the 500 descendants of a prosperous 18th century Costa Rican landowner, an international team of researchers has found a gene that they say could account for many inherited forms of hearing loss.

Geneticists Pedro E. Leon at the University of Costa Rica in San Jose, and Mary-Claire King at the University of California, Berkeley mapped a gene for deafness to the long arm of chromosome 5. At last week's Eighth International Congress of Human Genetics in Washington, D.C., they reported finding the gene in deaf descendants of Felix Monge, a Costa Rican aristocrat who became deaf as a young man.

Affected members of the Monge family lose the ability to hear low-frequency sounds around puberty, and usually become deaf by age 30. Because the gene is a dominant trait, each child in the family with one deaf parent faces a 50 percent chance of inheriting the gene and going deaf.

Leon and King determined that the new gene lies near one responsible for Treacher Collins' syndrome, whose victims suffer both deafness and severe deformities. They now want to isolate the newly mapped gene, and determine how it causes deafness. They are also looking for it among other families with many deaf members.

Roughly one in every 1,000 Americans is born deaf; researchers estimate that half of the cases result from a genetic cause, and the rest stem from injury or viral illness.



Each year, teachers bring more than 60,000 students to the Exploratorium, San Francisco's internationally renowned hands-on science museum. Now teachers and students can create a mini-Exploratorium in their classrooms. The *Exploratorium Science Snackbook* is designed by science teachers, for science teachers: projects are easy to build using common, inexpensive materials; instructions are fully illustrated and packed with advice and helpful hints; and pages are designed for easy duplication and use in three-ring binders. An easy way to enhance any standard science curriculum with fun, hands-on learning!

— from the publisher

"Clear, concise and visual — the best assortment of wonder-filled ideas I have seen."

— Paul Hewitt, author of *Conceptual Physics*

To order by phone from
Science News Books, call:
1-800-544-4565
(Visa or MasterCard Only)

Exploratorium, 1991, approx. 225 pages, 8½" x 11", paperback, \$24.95

Science News Books, 1719 N Street, NW, Washington, DC 20036

ExplSciSnack

Please send me _____ copy(ies) of *The Exploratorium Science Snackbook*. I include a check payable to Science News Books for \$24.95 plus \$2.00 postage and handling (total \$26.95) for each copy. Domestic orders only.

Name _____
Address _____
City _____ State _____ Zip _____
Daytime Phone _____
(used only for problems with order)

RB1510

